UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,346	12/04/2001	Sang Hun Sung	HI-0049	9720

			EXAMINER
34610	7590	10/17/2005	GHULAMALI, QUTBUDDIN

FLESHNER & KIM, LLP
P.O. BOX 221200
CHANTILLY, VA 20153

ART UNIT	PAPER NUMBER
2637	

DATE MAILED: 10/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>07/26/2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-8 and 10-25* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-8 and 10-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☒ All   b)☐ Some *   c)☐ None of:

   1.☒ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Acknowledgement

1.   This Office Action is responsive to the Amendment filed by the applicant on 07/26/2005.

2.   Amendment of claims 1, 5, 7, 8, 12, 14 and 20, and cancellation of claims 3 and 9, filed

by the applicant on 07/26/2005, is hereby acknowledged.

3.   The applicant's amendment of claims 1, 5, 7, 8, 12, 14 and 20, however, does not place

the claims in condition for allowance, and rejection to claims 1, 2, 4-8 and 10-25, is therefore,

maintained.

Response to Arguments

4.   Applicant's arguments, filed 07/26/2005, regarding claims 1, 8, 14 and 20, has been

considered but does not place the application in condition for allowance.

The applicant's Remarks/Arguments, pages 12-13, regarding amended claims 1, 8, 14 and 20,

have been fully considered but are not persuasive. The applicant asserts that Ozukturk fails to

disclose converted information including converted phase value of a received pilot signal.

Examiner's response – The examiner considers that Ozukturk, on the contrary, discloses code

phase of the associated pilot signal is changed (convert) responsive to an acquisition signal value

until a detector indicates the presence of the despread associated pilot code signal by changing

the acquisition signal value (phase value) (please see col. 5, lines 55-67, also see col. 33, lines

42-67; col. 45, lines 40-67; col. 50, lines 5-20; col. 53, lines 59-67; col. 54, lines 1-8). Based on

the information disclosed, the examiner understands Ozukturk clearly shows the claimed

limitation ""converted information include converted phase value of a pilot signal". The claim

rejection is therefore maintained.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6.   Claims 8, 10-16, are rejected under 35 U.S.C. 102(e) as being anticipated by Ozukturk et

al (US Patent 6,049,535).

Regarding claim 8, Ozukturk discloses a communication system for estimating phase

information, comprising:

estimating synchronization data, based on received data (fig. 17, element 1730, 1304) (col. 45,

lines 15-35; col. 47, lines 50-55);

generating decoded data based on the received data and a code (col. 45, lines 50-56);

outputting an average value of the phase information obtained by averaging the synchronization

data and the decoded data (col. 45, lines 45-67; col. 26, lines 60-67; col. 27, lines 1-18); and

generating a cosA signal and a sinA signal to identify a converted phase value of the received

data in a pilot signal (see col. 5, lines 55-67, also see col. 33, lines 42-67; col. 45, lines 40-67;

col. 50, lines 5-20; col. 53, lines 59-67; col. 54, lines 1-8).

Regarding claim 14, Ozukturk discloses:

generating a synchronization signal and a converted phase value of a pilot signal with a matched

filter (1710) based on received data (fig. 17, element 1730, 1304) (col. 45, lines 15-35; col. 46,

lines 22-25);

establishing an average period based on the synchronization signal (col. 45, lines 50-56); and

averaging the converted phase value with decoded data during the averaging period to create the

phase information for the averaging period (col. 45, lines 45-67; col. 26, lines 60-67; col. 27,

lines 1-18).

Regarding claim 10, Ozukturk shows the average value is initialized using the

synchronization data (col. 27, lines 12-17).

Regarding claim 11, Ozukturk discloses a code (code period for the CDMA spreading

code) corresponds to a synchronization time of the synchronization data (estimating the

synchronization is to generate an accurate point of time) (col. 20, lines 18-21; col. 27, lines 12-

17).

Regarding claims 12 and 13, Ozukturk discloses averaging the converted phase value of

the pilot signal and the decoded data to obtain the phase information (col. 31, lines 1-25).

Regarding claims 15 and 16, Ozukturk discloses (fig. 14) multiplying the received data,

received during the averaging period, by a pseudo-noise (PN) code to form the decoded data

(col. 44, lines 26-36).

Claim Rejections - 35 USC § 103

7.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

8.   Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozukturk et

al (USP 6,049,535).

As per claim 20, the steps claimed as means is nothing more than restating the function of

the specific steps of the method as claimed above and therefore, it would have been obvious,

considering the aforementioned rejection for the method claim 14.

Regarding claims 21 and 22, Ozukturk discloses (fig. 14) multiplying the received data,

received during the averaging period, by a pseudo-noise (PN) code to form the decoded data

(col. 44, lines 26-36).

9.   Claims 17-19, and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Ozukturk et al (US Patent 6,049,535) in view of Petranovich (US Patent 5,376,894).

Regarding claims 17 and 23, Ozukturk discloses every feature of the claimed limitations

as set forth in the discussion above for claim 14 above. Ozukturk, however, is silent to specific

details of synchronization preamble within the received data. Petranovich in a similar field of

endeavor, discloses:

the synchronization signal is generated based on a synchronization preamble within the received

data (col. 3, lines 12-22);

the converted phase value is generated based on a phase preamble within the received data (col. 3, lines 15-22, 25-35); and

the converted phase value identifies a phase shift in the received data (fig. 16; col. 11, lines 20-28). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have synchronization signal and phase value generated based on a synchronization preamble and the converted phase value identify a phase shift in the received data as taught by Petranovich in the circuit of Ozukturk so as to allow the demodulator to synchronize its timing and to adequately decode the received signal data (symbols).

Regarding claims 18 and 24, Ozukturk discloses every feature of the claimed limitations as set forth in the discussion above for claim 14. Ozukturk, however does not explicitly disclose the converted phase value identifies a phase shift in a transition between symbols of the received data and multiple phases. Petranovich, in a similar field of endeavor discloses, the converted phase value identifies a phase shift in a transition between symbols of the received data (col. 4, lines 44-61); and the symbols are represented by multiple phases (col. 4 lines 55-61). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use converted phase value identify a phase shift in a transition between symbols of the received data and the symbols represented by multiple phases as taught by Petranovich in the system of Ozukturk because it can minimize error in phase of the received signal.

Regarding claims 19 and 25, Ozukturk discloses every feature of the claimed limitations as set forth in the discussion above for claim 14. Ozukturk, however, is silent regarding specifics of averaging a current and previous data to create phase information. Petranovich, in a similar field of endeavor discloses:

the decoded data received during a current averaging period with the phase information of a

previous averaging period to create the phase information for the current averaging period (col.

9, lines 32-45). Therefore, it would have been obvious to person of ordinary skill in the art at the

time the invention was made to use specifics of averaging a current and previous data to create

phase information as taught by Petranovich in the system of Ozukturk because it can provide

output indicative of whether there is a change in the consecutive values of the signal.

10.   Claims 1, 2, 4, and 5-7, are rejected under 35 U.S.C. 103(a) as being unpatentable over

Petranovich (US Patent 5,376,894) in view Ozukturk et al (US Patent 6,049,535).

        Regarding claim 1, Petranovich discloses a communication system comprising:

a matched filter (fig. 7, element 30) that outputs converted synchronization signals, based on

received data, and converted information of the received data (col. 6, lines 27-45, 64-67; col. 7,

lines 1-2);

a CPU (22) that receives the converted synchronization signals and the converted information to

provide a first output signal based on at least one of the converted synchronization signals and

the converted information outputted from the matched filter (col. 7, lines 60-67; col. 8, lines 1-

12); and a phase estimator (fig. 12) that generates decoded data based on the received data, the

estimator having a first averager that receives the first output signal from the CPU and the

decoded data to generate the phase information (col. 8, lines 1-31; col. 9, lines 57-61; col. 10,

lines 15-19, 53-61). Petranovich however, does nor explicitly disclose the converted information

comprises phase values of a received pilot signal. Ozukturk in a similar field of endeavor

discloses, converted information comprises phase values of a received pilot signal (col. 5, lines

55-67, also see col. 33, lines 42-67; col. 45, lines 40-67; col. 50, lines 5-20; col. 53, lines 59-67;

col. 54, lines 1-8). Therefore, it would have been obvious to person of ordinary skill in the art at

the time the invention was made to use converted information comprises phase values of a

received pilot signal as taught by Ozukturk in the system of Petranovich because it can provide

phase information extraction and minimize or constrain length of error correction codes.

Regarding claim 2, Petranovich discloses an apparatus for estimating phase information

conprising:

a first delayer (fig. 14) receiving the phase information and outputting delayed phase information

to the first averager, wherein the first averager generates subsequent phase information based on

the delayed phase information and the decoded data (col. 10, lines 53-67; col. 11, lines 1-20).

Regarding claim 4, Petranovich discloses the apparatus comprises: a second delayer

receiving the phase information and outputting delayed phase information to a second averager,

wherein a second averager of the phase estimator generates the subsequent phase information

based on the decoded data and the delayed phase information received from the second delayer

(fig. 13; col. 10, lines 15-25, 53-65).

Regarding claim 5, Petranovich discloses substantially the claimed limitations as set forth

in the discussion above for claim 1. Petranovich, however, is silent regarding signals are at least

one of locked position and locked energy signals; and the converted information is at least one of

a cosine and a sine signal. Ozukturk in a similar field of endeavor, discloses a signal value of

locked position (lock point) and locked energy signals (maximize signal-to-noise ratio; col. 27,

lines 10-17). It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to use locked position and locked energy signals as taught by Ozukturk in

the phase estimation and synchronization circuit of Petranovich because it can enhance tracking

and synchronization with the incoming signals.

Regarding claim 6, Petranovich discloses substantially the claimed limitations as set forth

in the discussion above for claim 1 including averaging data from the adders (col. 10, lines 53-

67; col. 11, lines 1-20). Petranovich, however, is silent regarding plurality of multipliers that

multiply the received data and a code; and an adder that adds the outputs from the multipliers.

Ozukturk, in a similar field of endeavor, discloses a (fig. 7), a plurality of multipliers that

multiply the received data and a code (col. 33, lines 60-67), an adder that adds data outputted

from the multipliers (col. 34, lines 1-12). It would have been obvious to a person of ordinary

skill in the art at the time the invention was made to use multipliers that multiply the received

data and a code; and an adder that adds the outputs from the multipliers as taught by Ozukturk in

the phase estimation circuit of Petranovich because it can compensate for the channel response

and the carrier phase rotation of the different multipath signals.

Regarding claim 7, Petranovich discloses substantially the claimed limitations as set forth

in the discussion above for claim 1. Petranovich, however, is silent regarding "converted

information is a changed phase value of a pilot signal outputted from the matched filter and the

CPU provides the converted information as the first output signal to initialize the first averager".

Ozukturk, in a similar field of endeavor discloses, converted information is a changed phase

value of a pilot signal outputted from the matched filter (col. 54, lines 1-8) and the CPU provides

the converted information as the first output signal to initialize (reset signal) the first averager

(col. 47, lines 50-60; col. 49, lines 16-18).). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use converted information is a changed phase value of a pilot signal outputted from the matched filter and the CPU provides the converted information as the first output signal to initialize the first averager as taught by Ozukturk in the phase estimation circuit of Petranovich because it can provide phase information from a converted information signal to properly initial the averager.

Conclusion

11.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

12.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the

organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QG.
October 13, 2005.

JEAN B. CORRIELUS
PRIMARY EXAMINER

10-13-05